

CE CIT UOB
ITCE471 (DSP)
Test 2

Time: 1 hour

Date: 2 Dec 2015

Dr. Riyadh Al-Hakim

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Q1 [15 marks]

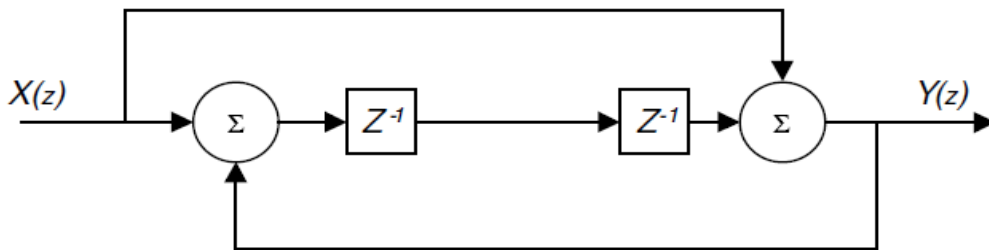
If the sampling frequency of the signal $x[n] = (0.5)^n u[n]$ is 10 kHz. Find the magnitude and phase of the **2 kHz** component of the spectrum when the number of data points = **20**

Q2 [35 marks]

Find the Z-transform of the system $h[n] = (2)^{-n} u[-n] + (-0.5)^n u[n]$. Discuss its ROC and stability.

Q3 [15 marks]

Find the **transfer function** of the following system:



Q4 [35 marks]

Find the **step response** of the following system:

$$H(z) = \frac{3}{1 + \frac{1}{3}z^{-1}}.$$